Brief Report

Development and implementation of a decision pathway for general practitioners for the management or referral of suspected allergy

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Significance for public health

One in three people in the UK are affected by allergies during their lifetime. Early diagnosis and appropriate management can improve quality of life and reduce emergency hospitalisation. However, referring patients to secondary care is costly in terms of time and resources. We developed a pathway algorithm to support General Practitioners' (GPs) allergy management and referral decisions to ensure that all referrals to specialist clinics were appropriate. The study illustrates a *real world* implementation with lessons for those seeking to improve the primary-secondary care interface, implementing pathways in various formats. In the UK, Map of Medicine seems to be the most used software. We demonstrated the difficulty of *reaching* GPs to encourage adoption of online decision support and suggest new ways forward by expanding care pathways into more detailed protocols for use directly by patients.

Abstract

Many patients with suspected allergy are referred to specialist care inappropriately. We aimed to develop and implement an online decision pathway to aid General Practitioners' (GPs) management decisions in suspected allergy. Our study involved 1487 GPs, 3 referral management centres, 5 GP system suppliers, 4 primary care trusts, and 1 specialist allergy clinic. The pathway was implemented by 3/5 GP system suppliers, published to Map of Medicine and on a specialist clinic website. In the first year, the pathway ranked in the top 10/160 local care maps accessed via Map of Medicine and was viewed 900 times. Only 96 GPs registered to use the clinic website. Only 110 (7%) GPs responded to the feedback request, of which 13/110 (12%) had used the pathway; nearly all thought it useful. It was used by referral management centres as *explanation* of rejected referrals. Alternative approaches to embed its use are required.

Introduction

One third of the UK population will be affected by allergy during their lives. The severity of symptoms varies from mild nasal congestion to anaphylactic shock. While there is currently no cure for most allergies, early diagnosis and appropriate management can improve quality of life and reduce emergency hospitalisation.

The cost of referring patients to secondary care is high and in England the number of referrals is increasing.[1] Avoidable outpatient appointments waste resources and delay specialist care to those with greater need. One specialist hospital-based allergy clinic [Peninsula Allergy Service (PAS)] (two consultant immunologists) served all 1487 general practitioners (GPs) in the Devon and Cornwall Peninsula (population 1.6 million). In our 11-year audit of patients presenting with allergy symptoms referred to the PAS,[2] only 43% were diagnosed with allergy, others having associated conditions such as idiopathic urticaria and angioedema or food intolerance.[3,4] This indicated a need to guide GPs better on management options and education for clearer differentiation of allergy and non-allergy symptoms.[5]

Referral guidelines are more effective if implemented *actively* through for example, structured referral sheets or with educational outreach by specialists.[6,7] We aimed to develop a local pathway algorithm, making it available in as many online formats as possible to encourage its use.

Materials and Methods

Ethics and approval

This study, just involving NHS staff, was approved as *service evaluation* by NHS South West 1 ethics committee chair, Plymouth Hospitals NHS Trust (PHNT) research governance manager, and PHNT research and development officer in February 2011.

Context

This work was carried out during significant changes in the English NHS including setting up intermediate organisations called referral management centres. Three such centres were responsible for screening referrals to the PAS. Most local GPs used practice computer systems that stored patients' medical records, produced prescriptions, and linked to the national *Choose and Book* booking system,[8,9] and Map of Medicine (MoM). MoM aims to provide evidence-based specialist knowledge as clinical pathways, potentially improving referral decisions,[10,11] but the detail available in pathways varies considerably.

Some GP practice systems also had in-built decision support. There were five main computer system providers for GPs in the Peninsula in 2011, Microtest (www.microtest.co.uk), iSoft (www.isofthealth.com), EMIS (www.emis-online.com), TPP (http://www.tpp-uk.com) and Vision (http://www.inps4.co.uk). GPs' use of Choose and Book, MoM, and in-built decision support, varied. We were unaware of any GPs using computer patient interviewing (CPI).

The hospital hosting PAS had a *passive* website giving information about services. Some hospital departments (*e.g.* renal) had their own systems and websites for patients, but most, including the PAS, had

no website with most service provision still paper-based.

Pathway development

Participatory action research was used to develop the pathway, led by PAS consultants, with two local GPs, ENT surgeon, respiratory physician, public health researchers, IT officers from local Primary Care Trusts responsible for MoM, and GP system suppliers. The pathway developed through assessment of referral practices, and development of common *symptom-sets*, national diagnoses and management.

Pathway integration

We aimed to make the pathway available in three formats: i) PAS Website including pathway, continuing professional development (CPD), links to other websites, and forums for professionals and patients; ii) MoM translated to MoM care map; iii) GP systems via in-built decision support.

Dissemination

The PAS website and pathway were publicised via i) emails to GPs from previous surveys, ii) new PAS Facebook and Twitter accounts, iii) presentations at local GP allergy courses, iv) local press releases, and v) user updates from GP suppliers and MoM. The PAS website was advertised to clinic-attenders via posters and web address *business cards*.

Assessment of utility

In June 2013, to assess the implementation and utility of the pathway we used i) PAS website analytics, ii) MoM analytics and iii) emails to 1487 GPs in the Peninsula asking if they (a) knew of the PAS website and pathway, (b) had used it, (c) found it useful.

Results

Peninsula Allergy Service website

We launched a website (Figure 1) for GPs and for adults living with allergy in the Peninsula in April 2012. GPs could access the pathway [as PDF file (Figure 2) and as link to MoM (Figure 3)], take part in (CPD) in which short cases tested their allergy referral knowledge and offered a certificate on completion. The website had links to research papers, allergy support websites, and discussion forums (one for GPs only, and one for patients). The full pathway is available from the authors. The website was visited 1362 times by 771 unique visitors by June 2013. Between April 2012

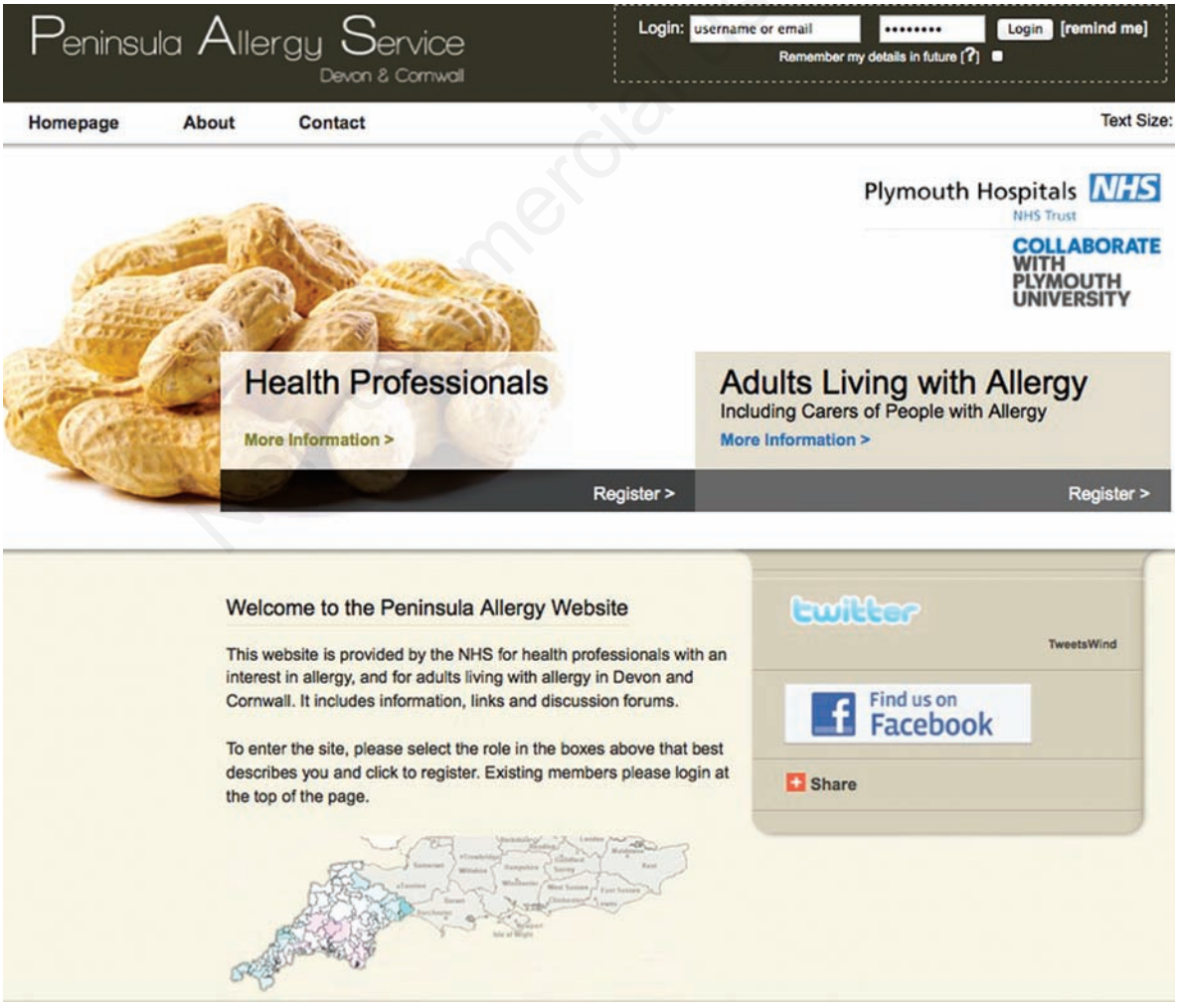

Figure 1. Screenshot of *Peninsula Allergy Service* website.

and June 2013, 68 health professionals from the Peninsula registered to use the website, with 219 visits to the pathway section. A further 28 GPs registered between June and August 2013 probably as a result of this survey. There were very few contributions to the discussion forum for GPs.

Map of Medicine

The pathway was published to MoM (Figure 3) Local Pathways in June 2012, accessible to GPs via the MoM website or via shortcut link from their practice system. In the year June 2012 to May 2013 the pathway was the sixth most viewed pathway (900 views) out of all 160 local care maps If these 900 views were made by different local GPs it would represent use by 61% (900/1487) GPs.

General Practitioners systems

Three of the five GP systems integrated the pathway into their systems: i) iSOFT adapted pathway content as a questionnaire where collected information can be directly added to patient notes. This was made available to install from their media centre. Awareness was raised via product announcements. Unfortunately, iSOFT subsequently withdrew from the GP market and their practices adopted other systems. ii) Microtest adapted pathway content as web links from within their system with the option to copy and paste collected information into patient notes. Awareness was raised via email with directions for use. iii) Vision adapted pathway content as zip files emailed to each practice with instructions for importing into the system.

The other two systems (EMIS and TPP) gave access via links within their systems to MoM.

General Practitioners views

Our survey response rate was poor; 1487 GPs were emailed the brief questionnaires (by direct email or via practice manager), of which 110 responded (7%). Thirteen (12%) had used the pathway, 12 via MoM, 2 via the PAS website; 12 thought it useful, one was not sure. 8/13 gave brief additional comments (all positive). A quarter (24%, 23/97) of those who had not used the pathway were not aware of it until the survey and 39% (38/97) indicated interest in future use. There were indications of potential barriers including time taken to access MoM (9/97).

Use in referral triage

All referrals to PAS are *triaged* by three referral centres in the Peninsula since 2011. All centres signposted the pathway as explanation with all rejected GP referrals.

Discussion

Limited success

A simple agreed allergy pathway was successfully developed and made available via 3/5 GP systems, MoM, and on a new PAS website. Data from MoM analytics showed the pathway was frequently used. However our survey suggested that although relatively few GPs were aware of it, those who were, found it useful.

The effectiveness and efficiency of referrals have been studied for decades,[12] but development of consensus protocols and pathways does not guarantee subsequent adherence.[13] To succeed they must be integrated with computer systems used by GPs, such as MoM and practice systems. Although, a recent review found little evidence on the impact of MoM, there were some indications for its use within service redesign, including increase in appropriate referrals.[10,11]

Many Primary Care Trusts set up referral centres to act between

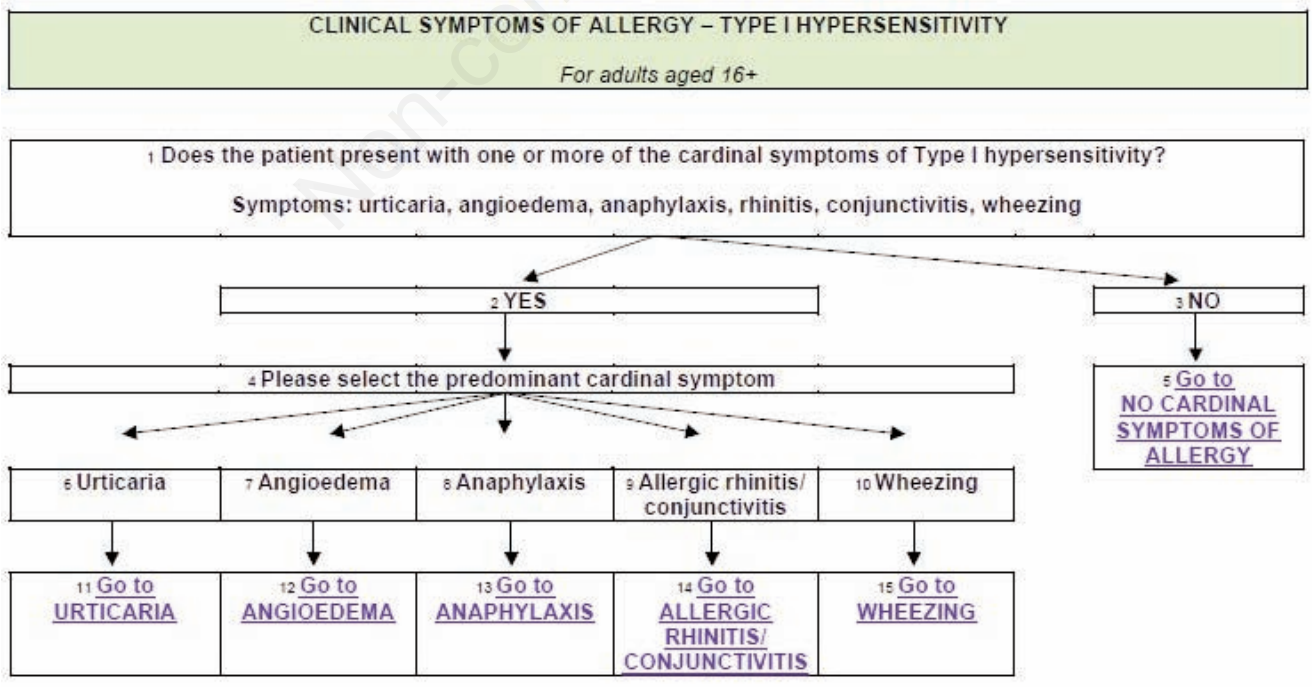

Figure 2. Screenshot of the hyperlinked PDF of allergy pathway via *Peninsula Allergy Service* website.

primary and secondary care. Some simply gather information, others (as in this study), clinically assess and triage referrals, perhaps at considerable overhead per referral.[4] Without full clinical information they can present clinical risks if based on poor-quality referrals. An audit of referrals,[14] applying two quality criteria for referral letters,[15] found no improvements after the introduction of referral centres. However, there appeared to be growing evidence that peer review and audit can reduce overall referral rates while providing insight into individual GPs' training needs. The pathway is now used by all three referral centres saving the need for detailed comments on rejected referrals.

Our aim was to integrate CPD of GPs about allergy with management support. The PAS website offered some online CPD which may attract GPs to register and use the website. We also aimed to integrate website use into local face-to-face courses to reinforce knowledge and behaviour. Continued integration and use in that way would build up a cadre of users.

Future work

More work is needed to successfully integrate use of the pathway into general practice. As GPs are inundated with information, gaining their attention is difficult, and having to remember new usernames and passwords a barrier to use. We had expected that more might have used the pathway integrated into their GP systems but it may be that GPs now tend to associate guidelines and pathways with MoM and, if allergy was one of few integrated directly into GP systems, they would not remember its location. On the other hand GP system suppliers should improve accessibility of decision support at *minimum clicks*.

Referral centres introduce another step to the referral process. GPs with special interest in a specialty are employed to assess risk, to triage, and to select the most appropriate destination for patients, based on GP referral letters. Without access to patients' full primary care records, triaging GPs depend solely on referral letters to make decisions, so referral letter quality acquires even greater importance. If accompanied by computer-taken histories, referral letters would include a complete history.

Several hundred studies have shown the benefits of CPI (history-taking by computer) since the 1960s,[16] though we are not aware of its use in suspected allergy. In the USA CPI has become routine with Instant Medical History embedded in over 40 Electronic Medical Record systems and used for several million patient visits.[17] Patients complete online interviews before consultations, history summaries are added to medical records and available to patients and doctors. Patients respond favourably to its use.[18] This approach would be a logical extension to use of allergy, and other, pathways in assessing referred patients. GPs would refer patients with suspected allergy to complete a CPI and would receive a summary and provisional recommendation to refer or not. If GPs continue to referral they would send summaries of presenting symptoms to the referral

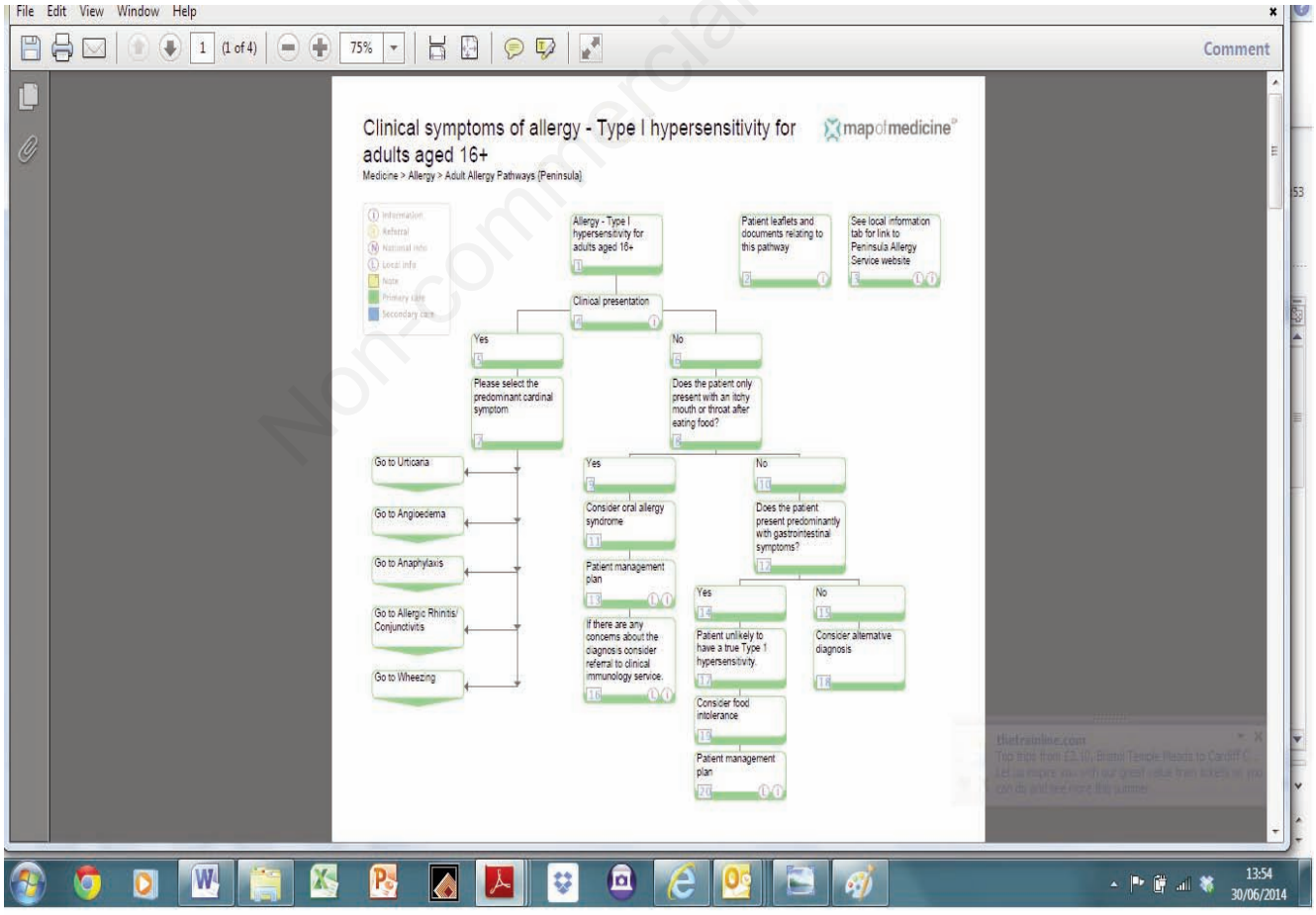

Figure 3. Screenshot of allergy pathway via *Map of Medicine*.

centre. This would ensure that referral centres, and subsequently allergy specialists, had the necessary clinical information to make correct decisions.

By involving patients it would also help to *drive* use of the pathways. Elwyn suggested making patient decision support available before referral for reliably diagnosed conditions.[19] Our follow-up survey of patients who had attended PAS and been diagnosed with Type 1 allergy showed that one in six had major differences in views of their allergy compared to that recorded in the clinical record.[20] There is a need for on-going patient education and integrating this with CPI offers one opportunity. By expanding MoM pathways and reformatting to become CPI we can also educate patients about allergy.

Limitations

Our feedback data on use of the pathway was limited and somewat contradictory. MoM data suggested quite frequent use, and anecdotally, conversations with some GPs also suggested frequent use. However our (very low response) email survey suggested relative little use.

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Conclusions

We have shown that it is possible to develop and implement an allergy pathway in various formats. Although the pathway was developed for the Peninsula it could be applicable to Europe. The MoM format seems most used but more work is needed on dissemination, integration with CPD and general practice. An alternative approach worth pursuing is to develop the pathway into a more detailed CPI and to build this into referral management.

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